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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,545

02/24/2005

Masahiko Seki

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EXAMINER

WINKLER, MELISSA A

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,545	<b>Applicant(s)</b> SEKI ET AL.	
	<b>Examiner</b> MELISSA WINKLER	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-9 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-9 and 15-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/26/08 and 5/5/08</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Priority*

Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon applications filed in Japan on August 28, 2001 and August 29, 2001. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 4, 7, 15, and 17 - 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,824,709 to Suka in view of US 5,814,673 to Khait.

**Regarding Claims 1 and 7.** Suka teaches a method of recycling foamed polystyrene beginning with the reduction of the volume of the foamed polystyrene in a dissolving bath to form a resin mixture (Column 2, Lines 47 – 50 and 55 - 62).

Suka et al. teach the solvent is subsequently evaporated by heating at a temperature of 200 to 300°C (Column 3, Lines 15 - 17). While applicant teaches evaporation of the solvent at 200°C or less, it has been held that where the claimed ranges overlap or lie inside ranges disclosed by the prior art a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) (MPEP 2144.05)

The resin mixture is subsequently extruded (Column 3, Lines 28 – 31).

Suka does not teach reducing the volume of the polystyrene prior dissolving step in an extruder without the application of external heat. However, Khait also teach a method of recycling polymeric materials in which the polymer material is first pulverized in an extruder. Khait indicates that the material is preferably only subjected to frictional heating when pulverized (Column 9, Lines 24 – 29; Column 12, Lines 60 – 61; Column 13, Lines 1 – 3). Suka and Khait are analogous art as they are from the same field of endeavor, namely methods of recycling polymeric materials such as polystyrene. At the time of invention, it would have been obvious to a person of ordinary skill in the art to perform the initial volume-reducing step taught by Suka in an extruder without the application of external heat. The motivation would have been that the heatless pulverization of polystyrene in an extruder is advantageous to reduce

energy consumption, as well as to reduce heat degradation of the polymer and dyes present within the polymers (Khait: Column 13, Lines 9 – 14).

**Regarding Claim 4.** Suka teaches the method of Claim 1 wherein the solvent used in the dissolving step preferably has a boiling point between 75 and 175°C (Column 2, Lines 50 – 56).

**Regarding Claim 15.** Suka teaches the method of Claim 7 wherein the solvent used in the dissolving step preferably has a boiling point between 75 and 175°C (Column 2, Lines 50 – 56).

**Regarding Claims 17 - 19.** Suka teaches the method of Claim 1 wherein the polystyrene sent to a classification separator apparatus prior to its introduction into a dissolving bath. While applicant claims first dissolving the polystyrene and then supplying it to the apparatus, it has been held that a selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See *In Re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (MPEP 2144.04(IV)(C))

Suka et al. teach the solvent is subsequently evaporated by heating at a temperature of 200 to 300°C (Column 3, Lines 15 - 17). While applicant teaches evaporation of the solvent at 200°C or less, it has been held that where the claimed ranges overlap or lie inside ranges disclosed by the prior art a *prima facie* case of

obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) (MPEP 2144.05)

The resin mixture is subsequently extruded (Column 3, Lines 28 – 31).

Limitations directed to the separation and recovery apparatus do not further limit the instant claims, which are directed to a method.

**Claims 2, 8, 9, and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,824,709 to Suka, as applied to Claim 1 above, and further in view of US 5,217,660 to Howard.

**Regarding Claim 2.** Suka teaches the method of Claim 1 forms resin pellets that can be recycled and used again (Column 3, Line 36). While Suka does not expressly teach steps for producing an expanded product from these pellets, Howard also teaches a method of recycling polystyrene foam in which recycled expanded polystyrene foam pieces are processed to form an expanded polystyrene foam article (Column 3, Lines 10 – 55 and Column 4, Lines 14 - 21). Suka and Howard are analogous art as they are from the same field of endeavor, namely methods of recycling polystyrene foam. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use the pellets comprising recycled polystyrene taught by Suka to form a new expanded polystyrene foam product. The motivation would have been that foam products from

recycled polystyrene can be used in many applications, such as insulation and packaging, and their production could reduce the high levels of polystyrene waste occupying landfills (Howard: Column 1, Lines 12 – 31 and Column 2, Line 9 – 13).

**Regarding Claims 8 and 9.** Suka teaches the method of Claim 1 forms resin pellets that can be recycled and used again (Column 3, Line 36). While Suka does not expressly teach steps for producing an expanded product from these pellets, Howard also teaches a method of recycling polystyrene foam in which recycled expanded polystyrene foam pieces are processed to form an expanded polystyrene foam article (Column 3, Lines 10 – 55 and Column 4, Lines 14 - 21). In the method taught by Howard, the pieces of recycled polystyrene are transferred to a reaction chamber and contacted/impregnated with an expanding agent, specifically pentane gas (Column 6, Lines 15 - 44). The pieces are subsequently routed to a mixing chamber where they are mixed with other polystyrene beads. The mixture is then routed to a molding unit in which the final foam product is formed (Column 6, Line 59 – Column 7, Line 25). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use the pellets comprising recycled polystyrene taught by Suka to form a new expanded polystyrene foam product using the method taught by Howard. The motivation would have been that foam products from recycled polystyrene can be used in many applications, such as insulation and packaging, and their production could reduce the

high levels of polystyrene waste occupying landfills (Howard: Column 1, Lines 12 – 31 and Column 2, Line 9 – 13).

**Regarding Claim 16.** Suka teaches the method of Claim 8 wherein the solvent used in the dissolving step preferably has a boiling point between 75 and 175°C (Column 2, Lines 50 – 56).

**Claims 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,824,709 to Suka, as applied to Claim 1 above, and further in view of JP 2000-025602 to Shin-Etsu Chemical Company (hereinafter Shin-Etsu). For convenience, citations are taken from the English-language abstract provided by applicant.

**Regarding Claims 5 and 6.** Suka teaches the method of Claim 1 but does not teach the claimed solvents are used. However, Shin-Etsu teaches the volume reduction of styrene foam using a methylene chloride and epoxide solution (Abstract, “Novelty” and “Advantage”). Suka and Shin-Etsu are analogous art as they are from the same field of endeavor, namely methods involving the volume reduction of styrene foam. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use methylene chloride and epoxide solvents in the volume-reducing step in the method taught by Suka. The motivation would have been that the combination of methylene chloride and epoxide would achieved an efficient reduction in the volume of



the styrene foam while reducing the chance of firing during processing (Shin-Etsu Abstract, "Advantage").

### *Response to Arguments*

Applicant's arguments with respect to claim 1, 2, 4 – 9, and 15 - 19 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date

of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

*Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA WINKLER whose telephone number is (571)270-3305. The examiner can normally be reached on Monday - Friday 7:30AM - 5PM E.S.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/  
Supervisory Patent Examiner, Art Unit 1796

MW  
September 8, 2008